

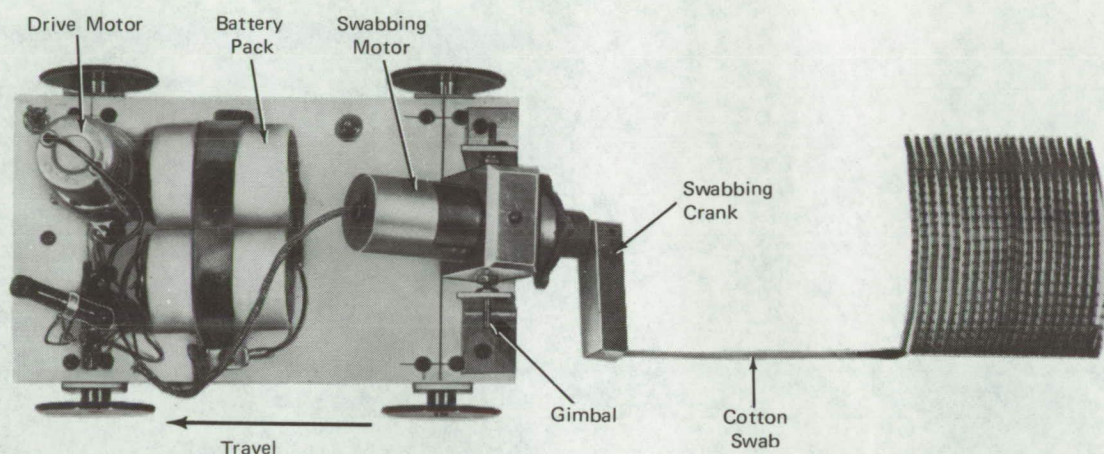
# NASA TECH BRIEF

## Langley Research Center



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### Microbiological Surface Sampling Cart



The Mobile Surface Sampling Cart, as shown in the figure, is a device which automatically swabs surfaces for the recovery of microorganisms; it operates without human involvement and provides for control of swabbing speed, rotation of the cotton swab, and the pressure and angle applied to the swab.

The motor-driven sampling cart is 6 inches (15 cm) wide, 11 inches (28 cm) long, and 6 inches (15 cm) high and powered by two 10-volt rechargeable nickel-cadmium battery packs wired in parallel, which provides a capacity of 900 milliampere-hours. The drive motor is coupled directly to the drive shaft through bevel gearing, and 10 volts dc is applied to the motor for a maximum drive speed of 1 inch (2.5 cm) of travel in 3.3 seconds. Adjusting the 100-ohm potentiometer enables the sampling cart to be driven at different speeds. The swabbing crank, with provisions for holding the cotton swab, is attached to the motor which is mounted in a single gimbal. Moving the swab motor back and forth or up and down alters the pressure and angle of the swab relative to the sampling surface. The area to be sampled

is controlled by means of a microswitch attached to the rear of the cart. The capability of reverse direction is also available.

In the operation, a cotton swab samples the desired area. The motion of the swab, which is in continuous contact with the sampling surface has, in addition to a 4-inch (10 cm) side-to-side action, a spiraling action along its longitudinal axis. At a speed of 9.5 inches (24 cm)/minute, there are 7 strokes/inch (2.8 strokes/cm) of sampling area, and by swabbing at right angles to the cart motion, excellent coverage of the surface area is obtained.

Preliminary results indicated that good recovery of natural fall-out contamination was obtained with this technique when compared to the conventional hand swabbing method. With the capability of reverse direction, the unit can be used in situations where it is desirable to have no human contact such as in contaminated areas or clean rooms.

Use of the sampling cart is limited to flat surfaces and would have no application to curved or irregular sur-

(continued overleaf)

faces. Even though the application of the sampling cart is limited, it is felt that, in view of the widespread use of the cotton swab for surface sampling, the features of no-operator participation and the capability to sample restricted areas outweigh this disadvantage.

**Note:**

No additional documentation is available. Specific questions, however, may be directed to:

Technology Utilization Officer  
Langley Research Center  
Langley Station/Mail Stop 139A  
Hampton, Virginia 23365  
Reference: B72-10395

**Patent status:**

Inquiries concerning rights for the commercial use of this invention should be addressed to:

Patent Counsel  
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